

Notice of Allowability

Application No.

10/684,403

Examiner

Craig A. Renner

Applicant(s)

KUWAJIMA ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to paper(s) filed 06 September 2007.
2. ☒ The allowed claim(s) is/are 1,4-11 and 19-25 (renumbered 1-16, respectively).
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

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1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06 September 2007 has been entered.

2. After the examiner's amendment, *infra*, claim 1 is generic and allowable over the prior art of record. Therefore, the restriction requirement, as set forth in the Office action mailed on 10 May 2006, has been reconsidered in view of the allowability of claims to the elected invention pursuant to MPEP § 821.04(a). **The restriction requirement is hereby withdrawn as to any claim that requires all the limitations of an allowable generic claim.** Claims 5 and 20, directed to one or more non-elected inventions/species, are no longer withdrawn from consideration because these claims require all the limitations of an allowable generic claim. However, claims 2 and 12-17, directed to one or more non-elected inventions/species, remain withdrawn from consideration because they do not require all the limitations of an allowable generic claim.

In view of the above noted withdrawal of the restriction requirement, applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Kevin McDermott on 27 September 2007.

4. The application has been amended as follows:

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IN THE CLAIMS:

The claim listing has been amended to read as follows:

1. (Currently Amended) A piezoelectric actuator comprising:

a flexible substrate including a slit so as to form a first flexible substrate and a second flexible substrate, said first and second flexible substrates being positioned in and along a same plane and being separated by the slit;

a first piezoelectric element unit disposed on said first flexible substrate;

a second piezoelectric element unit disposed on said second flexible substrate approximately in parallel with said first piezoelectric element unit such that said first and second piezoelectric element units are separated from each other by the slit; and

a coupling portion that extends across the slit and couples said first flexible substrate to said second flexible substrate to suppress a wavy resonance phenomenon of said first flexible substrate and said second flexible substrate, wherein said coupling portion is positioned to correspond to a location of an antinode of a primary bending mode of said first piezoelectric element unit and said second piezoelectric element unit, wherein each of said first and second piezoelectric element units includes a first end and a second end, wherein said first and second ends of said first piezoelectric element unit are fixed on said first flexible substrate, and wherein said first and second ends of said second piezoelectric element unit are fixed on said second flexible substrate.

2-3. (Cancelled).

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4. (Currently Amended) The piezoelectric actuator according to claim 1, wherein said coupling portion is composed of a wiring material provided on said first and second flexible substrates.
5. (Previously Presented) The piezoelectric actuator according to claim 1, wherein said coupling portion is constructed by a plurality of ladder shaped coupling portions.
6. (Original) The piezoelectric actuator according to claim 4, wherein said wiring material is in common use for said first piezoelectric element unit and said second piezoelectric element unit.
7. (Previously Presented) The piezoelectric actuator according to claim 1, wherein said coupling portion is provided across said first and second flexible substrates, and the thickness of said coupling portion is larger than the width of said coupling portion.
8. (Previously Presented) The piezoelectric actuator according to claim 1, wherein said first piezoelectric element unit and said second piezoelectric element unit are configured to move in opposite directions with respect to each other.
9. (Previously Presented) The piezoelectric actuator according to claim 1, wherein said first piezoelectric element unit and said second piezoelectric element unit each comprise a thin film piezoelectric body.

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10. (Previously Presented) The piezoelectric actuator according to claim 9, wherein said first piezoelectric element unit and said second piezoelectric element unit form a multilayered structure including two thin film piezoelectric element bodies, each of the bodies comprising a thin film piezoelectric element covered by a metal coating layer on top and bottom surfaces of the bodies, with an adhesive layer sandwiched between the top and bottom surfaces of the bodies.

11. (Previously Presented) A disk drive comprising:

- (a) a disk;
- (b) a head slider equipped with a magnetic head;
- (c) a flexure to fix said head slider;
- (d) an arm to be fixed with said flexure;
- (e) a first positioning device configured to move said arm through a rough

displacement; and

- (f) a second positioning device configured to make said head slider fixed on said arm perform a fine displacement,

wherein said second positioning device is composed of an actuator having a piezoelectric element, and said actuator is the piezoelectric actuator according to claim 1.

12-18. (Cancelled).

19. (Previously Presented) A disk drive comprising:

- (a) a disk;
- (b) a head slider equipped with a magnetic head;
- (c) a flexure to fix said head slider;
- (d) an arm to be fixed with said flexure;
- (e) a first positioning device configured to move said arm through a rough

displacement; and

(f) a second positioning device configured to make said head slider fixed on said arm perform a fine displacement,

wherein said second positioning device is composed of an actuator having a piezoelectric element, said actuator being said piezoelectric actuator according to claim 4.

20. (Currently Amended) A disk drive comprising:

- (a) a disk;
- (b) a head slider equipped with a magnetic head;
- (c) a flexure to fix said head slider;
- (d) an arm to be fixed with said flexure;
- (e) a first positioning device configured to move said arm through a rough

displacement; and

(f) a second positioning device configured to make said head slider fixed on said arm perform a fine displacement,

wherein said second positioning device is composed of an actuator having a piezoelectric element, said actuator being said piezoelectric actuator according to claim 5.

21. (Previously Presented) A disk drive comprising:

- (a) a disk;
- (b) a head slider equipped with a magnetic head;
- (c) a flexure to fix said head slider;
- (d) an arm to be fixed with said flexure;
- (e) a first positioning device configured to move said arm through a rough displacement; and
- (f) a second positioning device configured to make said head slider fixed on said arm perform a fine displacement,

wherein said second positioning device is composed of an actuator having a piezoelectric element, said actuator being said piezoelectric actuator according to claim 6.

22. (Previously Presented) A disk drive comprising:

- (a) a disk;
- (b) a head slider equipped with a magnetic head;
- (c) a flexure to fix said head slider;
- (d) an arm to be fixed with said flexure;
- (e) a first positioning device configured to move said arm through a rough

displacement; and

(f) a second positioning device configured to make said head slider fixed on said arm perform a fine displacement,

wherein said second positioning device is composed of an actuator having a piezoelectric element, said actuator being said piezoelectric actuator according to claim 7.

23. (Previously Presented) A disk drive comprising:

- (a) a disk;
- (b) a head slider equipped with a magnetic head;
- (c) a flexure to fix said head slider;
- (d) an arm to be fixed with said flexure;
- (e) a first positioning device configured to move said arm through a rough

displacement; and

(f) a second positioning device configured to make said head slider fixed on said arm perform a fine displacement,

wherein said second positioning device is composed of an actuator having a piezoelectric element, said actuator being said piezoelectric actuator according to claim 8.

24. (Previously Presented) A disk drive comprising:

- (a) a disk;
- (b) a head slider equipped with a magnetic head;
- (c) a flexure to fix said head slider;
- (d) an arm to be fixed with said flexure;
- (e) a first positioning device configured to move said arm through a rough displacement; and
- (f) a second positioning device configured to make said head slider fixed on said arm perform a fine displacement,

wherein said second positioning device is composed of an actuator having a piezoelectric element, said actuator being said piezoelectric actuator according to claim 9.

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25. (Previously Presented) A disk drive comprising:

- (a) a disk;
- (b) a head slider equipped with a magnetic head;
- (c) a flexure to fix said head slider;
- (d) an arm to be fixed with said flexure;
- (e) a first positioning device configured to move said arm through a rough

displacement; and

(f) a second positioning device configured to make said head slider fixed on said arm perform a fine displacement,

wherein said second positioning device is composed of an actuator having a piezoelectric element, said actuator being said piezoelectric actuator according to claim

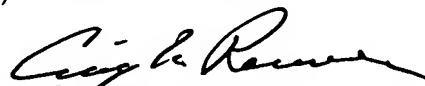
10.

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5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig A. Renner whose telephone number is (571) 272-7580. The examiner can normally be reached on Tuesday-Friday 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Craig A. Renner
Primary Examiner
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